

SURFACE WATER AMBIENT TOXIC MONITORING PROGRAM

FINAL REPORT EXECUTIVE SUMMARY 2005

**DIVISION OF ENVIRONMENTAL ASSESSMENT
MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
AUGUSTA, MAINE 04333**

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INTRODUCTION

This 2005 Surface Water Ambient Toxic (SWAT) monitoring program final report is organized into this Executive Summary (with introduction and table of contents) and 4 modules, 1) Marine & Estuarine 2) Lakes, 3) Rivers & Streams, and 4) Special Studies. The full report is available on DEP's website at <http://www.maine.gov/dep/blwq/docmonitoring/swat/index.htm>

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Chemical analyses were performed by Pace Analytical Services, Minneapolis, Minnesota or other laboratories as listed in reports in individual sections.

EXECUTIVE SUMMARY

Maine's Surface Water Ambient Toxics (SWAT) monitoring program was established in 1993 (38 MRSA §420-B) to determine the nature, scope and severity of toxic contamination in the surface waters and fisheries of the State. The program must be designed to comprehensively monitor the lakes, rivers and streams and marine and estuarine waters of the State on an ongoing basis. The program must incorporate testing for suspected toxic contamination in biological tissue and sediment, may include testing of the water column and must include biomonitoring and the monitoring of the health of individual organisms that may serve as indicators of toxic contamination. This program must collect data sufficient to support assessment of the risks to human and ecological health posed by the direct and indirect discharge of toxic contaminants.

The Commissioner of the Department of Environmental Protection (DEP) must prepare a 5-year conceptual workplan that outlines monitoring approach for the following 5 years. The Commissioner must also develop annual workplans that define the work to be accomplished each year. A Technical Advisory Group (TAG), composed of 10 individuals with scientific backgrounds representing various interests and 1 legislator, is established to advise the Commissioner on the development of the 5-year framework and annual workplans.

The first 5-year framework, for the period 1994-1998, was an initial sampling of all watersheds in the state. The 5-year plans for the periods 1999-2003 and 2004-2008 were focused on problems discovered in the initial periods and were designed to confirm the initial findings and establish background conditions. Once those are established and a sufficient amount of time has elapsed, 5-10 years depending on what if any action has occurred to solve the problem, repeat sampling may be conducted to determine if the problem has been solved. The program also explores new issues as they are identified.

The SWAT program is divided into 4 modules, 1) Marine and Estuarine, 2) Lakes, 3) Rivers and Streams, and 4) Special Studies. This annual report follows the outline of the 2005 workplan recommended by the SWAT TAG in a meeting June 9, 2005. Following is a summary of key findings from the 2005 SWAT program for each module.

1. MARINE AND ESTUARINE

- Sediment and softshell clam tissue monitoring occurred at 3 stations along the coast in 2005. Locations were selected in consultation with DMR and consisted of areas where the acquisition of toxics data would allow the update of information concerning closed areas and might potentially allow opening areas to commercial clam harvest. Results will be provided to DMR and the state toxicologist for analysis, update of flat closures, and other appropriate action.
- Sediment monitoring occurred at three areas of the coast in 2005. Spruce Creek, Kittery (four locations), and Barberry Creek and Clark's Pond, South Portland (one location each), were sampled for sediments in 2005.

- Lobster collections and analysis occurred at 13 stations over the eastern half of the Maine coast in conjunction with the EPA National Coastal Assessment. DEP recently received raw lobster data from the contracted laboratory. Pending review of the results, the data will be provided to the state toxicologist for use in updating public health advisories. It will also be posted on the DEP SWAT web site.

2. LAKES

- A cooperative study of bald eagles with the Maine Department of Inland Fisheries and Wildlife, US Fish and Wildlife Service, Passamaquoddy Tribe, Penobscot Nation, FPL Energy, and BioDiversity Research Institute found that concentrations of mercury in 19-30% of Maine eagles exceeds safe levels. Despite increasing populations in recent years, recovery has been limited by mercury levels, which are no lower than when last monitored in the early 1990s.

3. RIVERS AND STREAMS

- Thirty-nine stations were assessed for the condition of the benthic macroinvertebrate community. Results have been received to date (March 14, 2006) for seven stations. Four of the seven stations (57%) reported failed to attain the aquatic life standards of their assigned class.
- Striped bass and bluefish exceed the Maine Center for Disease Control and Prevention's (MCDC) fish tissue action levels for mercury and PCBs in estuaries all along the coast. MCDC is leading a process with all other Atlantic coast states with significant fisheries for these fish to explore the desirability of a coast wide fish consumption advisory, since these species are coast wide migrants.
- A Cumulative Effects-driven Assessment of fish populations above and below Lincoln found possible evidence of endocrine disruption and needs to be repeated.
- A repeat study of immune function in fish did not find any differences in innate immune system activity of smallmouth bass collected at sites above and below paper mill and municipal discharges on both the Kennebec and Androscoggin Rivers. This is unlike the results of previous work in 2004, when there was evidence of immune system disruption. The study needs to be repeated.
- A caged mussel study indicated endocrine disruption below a pulp and paper mill on the Kennebec River. The study needs to be repeated to confirm the findings.

4. SPECIAL STUDIES (from 2004)

- A study of 135 dead waterbirds of various species found no evidence of organophosphate or carbamate pesticide exposure. DDE was the highest organochlorine pesticide found in the present study. Overall, while organochlorine levels in the birds of this study are below sublethal ranges, values are elevated in some individuals. Two individuals (double-crested cormorant and hooded merganser) had DDE levels within the range of those associated with egg-shell thinning in double-crested cormorants. In addition, levels are similar to those found to impair immune response in herring gulls and glaucous gulls.

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